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Sahm, Harmann

<120> PROCESS FOR THE MICROBIAL PRODUCTION OF AMINO ACIDS BY BOOSTED ACTIVITY OF EXPORT CARRIERS

<130> FJ 122 - sequence listing

<140> 09/105,117  
<141> 1998-06-17

<150> PCT/DE96/02485  
<151> 1996-12-18

<150> 195 48 22.0  
<151> 1995-12-22

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<210> 1  
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<212> DNA  
<213> Corynebacterium glutamicum

Table 1

MNPIQLDTLL S<sup>IDE</sup>GSFEG ASLALSISPS AVSQRVKALE HHVGRVLVSR 50  
Helix-Turn-Helix-Motiv  
TQPAKATEAG EVLVQAARKM VLLQAETKAQ LSGRLAEIPL TIAINADSLS 100  
TWFPPVFNEV ASWGGATLTL RLEDEAHTLS LLRRGDVLGA VTREANPVAG 150  
CEVVELGTMR HLAIATPSLR DAYMVDGKLD WAAMPVLRFG PKDVLQDRDL 200  
DGRVDGPVGR RRVSIVPSAE GFGEAIRRGL GWGLLPETQA APMLKAGEVI 250  
LLDEIPIDTP MYWQRWRLES RSLARLTD<sup>A</sup>V VDAAI EGLRP 290

<210> 2  
<211> 2374  
<212> DNA  
<213> Corynebacterium glutamicum

Table 2

60

GGTAAACGAC TTCCACAATG AGACGGACCG GGTTAAGGACGCCGCTTCACTTTG  
120

/LysG

GGACTTGGAA AAGTCTTCAT TGATTCCGGC GTTAGGGAGC TAACGACGTA GTTGCTGCCG  
P R L G E I A A D V V A  
180

CAGACACTCA GATCGATCTC TAGATCTAAG GTCCGCGGT A GCAACGGTT A TGTAGCCACA  
D T L R A L S R S E L R W R Q W Y M P T  
240

CAGTTACCCA TAGAGTAGCT CCTCCTAGTG AAGAGGACGA AAATCGTACC CTCGTCGAAC  
D I P I E D L L I V E G A K L M P A A Q  
300

CCAAAGCCCT TCTTCAGGGG TTGGTTCCGG AGCCGCTTAA CGGAGTGGTT TTGGAAGGCG  
T E P L L G W G L G R R I A E G F G E A  
360

GCTGCCCTGT TACCTATGCG CGGACGCGGG GTGTCCTGGT AGCTGCGCGG GCAGGTCCAG  
S P V I S V R R R G V P G D V R G D L D  
420

TGCCAGAACT TCGTGTAGAA ACCCTGGCTT CGCATTCTGC CCGTAGCGTC GGGTAGATC  
R D Q L V D K P G F R L V P M A A W D L  
480

AAAGGGTAGT TGGTACATCC GTAGGGCGTT ACTCCCCAA CGTTACCGGT TCACCGCGTA  
K G D V M Y A D R L S P T A I A L H R M  
540

CCAAGGTCA AGATGATGAA GTGTAGGGCG GTGCCCTAAT CGAAGTGCC AATGGCGAGG  
T G L E V V E C G A V P N A E R T V A G  
600

ATTTGTAGA GGTGCGCGT CGTCCCTATT ACACACGCGA AGTAGAAGGT TCGCGTCGCA  
L V D G R R L L S L T H A E D E L R L T  
660

CTCGCAACGA GGTGGGGTTC TTCGATGGAG CAACTTGTGC CCTCCTTGG TACACCTATC  
L T A G G W S A V E N F V P P F W T S L  
720

GCTTAGACGC AACTACCGCT ACCAATTGCC CTAAAGTCGT TCCGCAGGTC TATCAACCGCG  
S D A N I A I T L P I E A L R G S L Q A  
780

AAATCAAAGA CGAACGTCGT TGTGGTAAAA GGCGCGACGA ACGTGTCCCT GAAGTGGCG  
K T E A Q L L V M K R A A Q V L V E G A  
840

AAGCCAACGA AACCGGCCAA CCCACGCGCT ATGGTTGTGA GCTGGGTGCA CTACGAGCTC  
E T A K A P Q T R S V L V R G V H H E L  
900

TCGAAATTGC GCGACTGAGT GGCGGCTCCC CCTTACCTT TCCCGATTCC TCCGCGGAAG  
A K V R Q S V A S P S I S L A L S A G E  
RCGS 960

<--LysG

CTTCGACGGA AGTAGTTACT AACTCTCGTT TCACAGGTC AACTACCC AAGTA—5'  
5' --- TGCCTTCATCAATGATTGAGAGCAAAGTGTCCAGTTGAATGGGGITCATGAAGCT  
F S G E D I I S L L T D L Q I P N M

RBS 1020

ATATTAAACC ATGTTAAGAA CCAATCATTT TACTTAAGTA CTTCCATAGG TCACGATGGT  
M V  
LysE-->  
1080

GATCATGGAA ATCTTCATTA CAGGTCTGCT TTTGGGGGCC AGTCTTTAC TGTCATCGG  
I M E I F I T G L L L G A S L L L S I G  
1140

ACCGCAGAACAT GTACTGGTGA TTAAACAAGG AATTAAGCGC GAAGGACTCA TTGCGGTTCT  
P Q N V L V I K Q G I K R E G L I A V L  
1200

TCTCGTGTGT TTAATTCTG ACGTCTTTT GTTCATCGCC GGCACCTTGG GCGTTGATCT  
L V C L I S D V F L F I A G T L G V D L  
1260

TTTGTCCAAT GCCGCGCCGA TCGTGCTCGA TATTATGCGC TGGGGTGGCA TCGCTTACCT  
L S N A A P I V L D I M R W G G I A Y L  
1320

GTTATGGTTT GCCGTATGG CAGCGAAAGA CGCCATGACA AACAAAGGTGG AAGCGCCACA  
L W F A V M A A K D A M T N K V E A P Q  
1380

GATCATTGAA GAAACAGAAC CAACCGTGCC CGATGACACG CCTTGGCG GTCGGCGGT  
I I E E T E P T V P D D T P L G G S A V  
>>>>> <<<<<<

1440

GGCCACTGAC ACGCGCAACC GGGTGGGGT GGAGGTGAGC GTCGATAAGC AGCGGGTTTG  
A T D T R N R V R V E V S V D K Q R V W  
1500

GGTAAAGCCC ATGTTGATGG CAATCGTGT GACCTGGTTG AACCCGAATG CGTATTGGA  
V K P M L M A I V L T W L N P N A Y L D  
1560

CGCGTTGTG TTTATCGCGC GCGTCGGCGC GCAATACGGC GACACCGGAC GGTGGATT  
A F V F I G G V G A Q Y G D T G R W I F  
1620

CGCCGCTGGC GCGTCGGCG CAAGCCTGAT CTGGTTCCCG CTGGTGGTT TCGGCGCAGC  
A A G A F A A S L I W F P L V G F G A A  
1680

AGCATTGTCA CGCCCGCTGT CCAGCCCCAA GGTGTGGCGC TGGATCAACG TCGTCGTGGC  
A L S R P L S S P K V W R W I N V V V A  
>>>>> <<<<<< / orf3  
- N E R T K

5' CTAC TGGCGTAACC GGTAGTTGA CTACAACAC CCAATAAAAA GCGCCAAAAA  
AGTTGTGATG ACCGCATTGG CCATCAAAC GATGTGATG GGTTAGTTT CGCGGG 5'  
V V M T A L A I K L M L M G -  
LysE / >>>>  
1740

1800

CCTTAGCCAC CGGAAGCGGG TTTACAACCA CGGCCGAGC ACCCTTACA GTAGCTAGCG  
S D T A K A W I N I G A D H S I E D I A  
<<<<

1860

GAGGTTGAGC CGCAGTCCTT TGAGGTTCAA CAACTCACIT AGTCCGACA ACAGGTCGAC  
E L E A D S F E L N N L S D L S N D L Q

1920  
 GAGTTGACTG CTTCGTGGTT AGTTACGTGA CCAGTGCCAT AGGCGCGGCA TGAGAGGAAC  
 E V S S A G I L A S T V T D A G Y E G Q  
 1980  
 GAGCGCGTCG TGGGTACGT CGCGGTAGAC GCGTTCACTG ACGGGCGCAA GGACCCGCTA  
 E R L V W A L A M Q A L S Q G R E Q A I  
 2040  
 CAGTAACCTCG AACGCCTGGT ATAGTTATAA CAAGTGCAAG TTGTACGGGA GTCTGTCCCT  
 D N L K R V M D I N N V N L M G E S L S  
 2100  
 GAATGGGACC GACCGCGCCC TTGGGAGACC TTAAGGTAGC TCTATAAAACA GGCACTCGTC  
 K G Q S A R S G E P I G D L Y K D T L L  
 2160  
 CGGGACCGT TCACCACTCT TTCTGTTACTG CGGTTCTGGT AACAAACCGTC GACTGACGTT  
 G Q A L P S F A I V G L G N N A A S Q L  
 2220  
 GTTCAAGAGT GGCAGTAGCG GGCCAAGGAG GTGGGTTGCT AATTACTACC TTATCGAACCC  
 L N E G D D G P E E V W R N I I S Y S P  
 2280  
 GACTACTTAG TCTTCGCCCCG TCAGGGAGGAG GCGGTACTTG AGTCGGCGGA GCGGACACTC  
 Q H I L L P C G E E A M F E A A E A T L  
 2340  
 GAGACCTGGC ATCCCTCTTT ATGGGTGCAT TTCTCGGAAA GGTCTGCGTT GTTACAGTGC  
 E P G Y S S I G V Y L A K G S A V I D R  
 2374  
 /-orf3+  
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 L A Y M T E E L P T D  
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 <213> Corynebacterium glutamicum

Table 3

MVIMEIFITG LLIGASLLS IGPQNVLVIK QGIKREGLIA VLLVCLISDV 50  
 TMH1 TMH2  
 FLFIAGTLGV DLLSNAAPIV LDIMRWGGIA YLLWFAVMAA KDAMTNKVEA 100  
 TMH3  
 PQIIEETEPT VPDDTPLGGS AVATDTRNRV RVEVSVDKQR VVVKPMLMAI 150  
 VLTWLNPNAY LDAFVFIGGV GAQYGDTGRW IFAAGAFAAS LIWFPLVGFG 200  
 TMH4 TMH5  
 AAALSRPLSS PKVWRWINVV VAVVMTALAI KLMLMG 236  
 TMH6